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The labour force in Canada and its regions: Projections to 2036

by Laurent Martel

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The labour force in Canada and its regions: Projections to 2036

by Laurent Martel

Overview of the study

In this study, data from the Demosim microsimulation model are used to assess the labour force participation rate of Canadians in 2036 under various scenarios of population growth and participation rates by age. In addition, the article provides an overview of the ethnocultural characteristics of persons who will be in the labour force in 2036, as well as an overview of regional differences in the characteristics of the labour force that may exist in 2036.

- According to the reference scenario, the number of Canadians who will be in the Canadian labour force (including persons who are employed or unemployed) is expected to continue to increase, from 19.7 million in 2017 to 22.9 million in 2036.
- Regardless of the scenario, however, the overall participation rate is expected to decrease mainly because of population aging, from 66% in 2017 to 63% or less in 2036.
- In 2016, just over 1 in 4 working people (26%) were born outside Canada. By 2036, according to the reference scenario, this proportion could reach 1 in 3 working people (34%). The proportion of people belonging to visible minorities in the labour force is also expected to continue to increase.
- Labour force growth is expected to remain positive in most Canadian regions, with the possible exceptions of Thunder Bay and Sudbury, and the non-metropolitan regions of Quebec and Atlantic Canada.
- In 2017, there were four people in the labour force for every person not in the labour force aged 65 and over. By 2036, this ratio could be less than 3 to 1 nationally, and could be less than 2 to 1 in some regions in non-metropolitan areas of Atlantic Canada, Quebec, Ontario and British Columbia; in metropolitan areas of Quebec except Montréal; and in the two metropolitan areas of Sudbury and Thunder Bay.

Introduction

From 1960 to 2010, the Canadian labour force—which includes persons who are employed or unemployed—grew faster than the population aged 15 and over. As a result, the weight of the labour force in the population aged 15 and over—also known as the overall participation rate— progressively increased during this period, reaching a peak of 68% in 2003 and 2008.

The rapid growth of the labour force over these 50 years was fuelled mainly by the arrival of the larger baby-boom generation (those born between 1946 and 1965) at working ages, and also by the increase in women's labour force participation and an equally rising level of education among the population.

In recent years, however, the overall Canadian participation rate began to decline, from 68% in 2008 to 66% in 2017. This is due to the fact that the population aged 15 and over is now growing faster than the labour force, although the latter is also still growing, but at a slower pace.

This trend reversal has occurred despite the fact that, since the mid-1990s, there has been a significant increase in labour market participation of people aged 50 and over. For example, the participation rate of people aged 60 to 64 who are close to retirement rose from 43% in 1995 to 61% in 2017 among men, and from 23% to 49% among women during the same period.

Population aging—principally, the aging of the large cohort of people born during the baby boom era—is the dominant factor currently putting downward pressure on the labour force participation rate. These individuals began leaving the workforce a few years ago to retire.[1] The last generation of baby boomers will reach the age of 65 in 2031.

Is it therefore inevitable that the overall participation rate will decline in the coming years? Could the size of the labour force decrease in absolute numbers? To what extent are other factors likely to influence future trends, such as immigration and a possible further increase in labour force participation rates among older workers?

The future development of the labour force is important for several reasons. An abundant supply of labour contributes to economic growth and the tax base on which many government programs are based. The number of people in the labour force relative to those who are economically inactive is an important element in the balance of some programs, including public pension plans. Finally, the ethnocultural composition and future age structure of the labour force are also of great interest to employers across the country—for the planning of programs that focus on topics such as knowledge transfer, immigrant integration and employment equity.

It is in this context that Canada's labour force projections represent a useful planning tool for decision making. After two series of projections released earlier by Statistics Canada (in 2007[2] and 2011[3]), this article presents new projections about Canada's labour force through 2036 using Demosim, a microsimulation population projection model. This article analyzes projected national trends in the size, growth, demographic weight, age structure and ethnocultural composition of the labour force. For the first time, results at the regional level are presented—for 18 major metropolitan and non-metropolitan areas of the country—in order to illustrate the large regional variations that could characterize the country in 2036.

The Demosim model used to produce these projections is described in detail in a methodological report published in 2017 by Statistics Canada.[4] The assumptions for the five scenarios developed for these labour force projections are detailed in the Data sources, methods and definitions section and are summarized in Table 1. These scenarios are intended to provide a plausible range for the future evolution of the labour force, and to reflect the uncertainty inherent in any projection exercise.

The growth of the labour force will slow in the coming years

In terms of absolute numbers, all scenarios indicate that the number of Canadians in the labour force should increase over the next few years (Chart 1). According to the reference scenario, this number could increase from 19.7 million people in the labour force in 2017 to 22.9 million in 2036. Depending on the scenario, the number of people in the labour force could vary from 21.1 million (low-growth scenario) to 24.2 million (high-growth scenario).

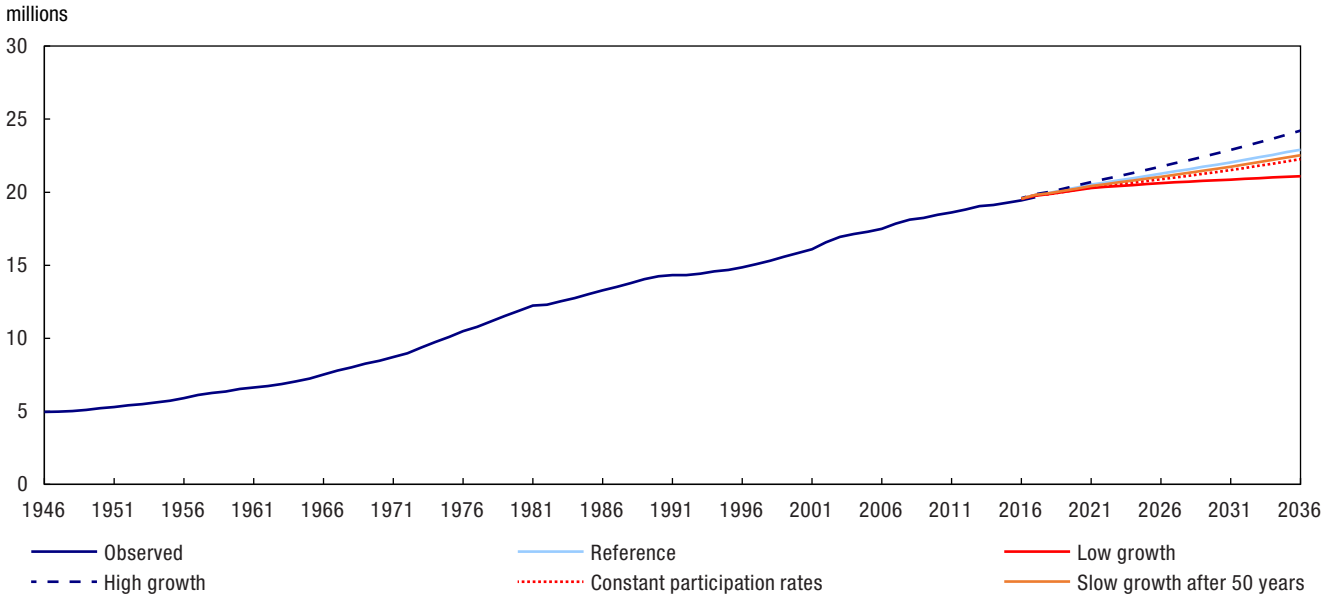
Four out of five scenarios, however, suggest that labour force growth could slow in the coming years (Chart 2). Only the high-growth scenario, which assumes a gradual increase in the annual immigration rate to about 1% of Canada's population by 2022 and stabilization thereafter, suggests that this growth could increase sligthly from current level (about 0.8% per year). The

Table 1
Projection scenarios for Canada's labour force

	Labour force	
Scenarios	Population growth assumptions	Participation rate assumptions
A - Reference	Medium growth	Trends from 1995 to 2017
B - Low growth	Low growth	Trends from 1995 to 2017
C - High growth	High growth	Trends from 1995 to 2017
D - Constant participation rates	Medium growth	Constants (2017 levels)
E - Slow growth after age 50	Medium growth	50% growth compared to the reference scenario

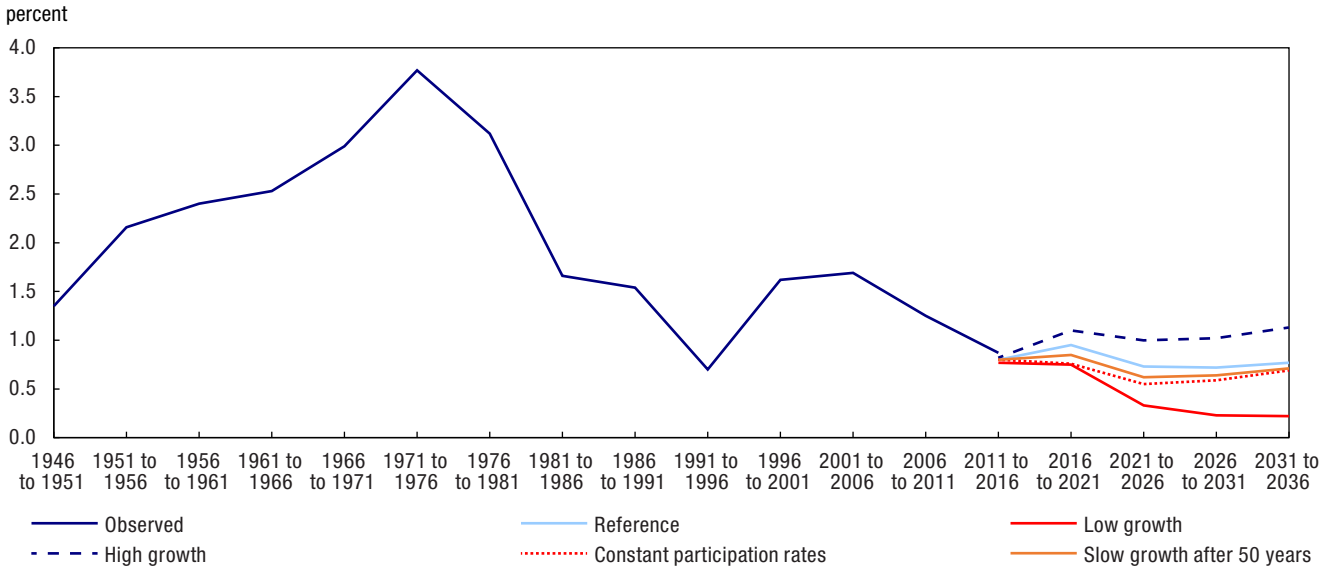
Source: Statistics Canada, Demography Division.

Chart 1
Observed (1946 to 2017) and projected (2018 to 2036) number of persons in the labour force according to five scenarios, Canada



Source: Statistics Canada, Labour Force Survey, 1946 to 2017; Demosim microsimulation model, 2017 (2036).

Chart 2
Observed (1946 to 2016) and projected (2011 to 2036) average annual changes in the labour force according to five scenarios, Canada



Source: Statistics Canada, Labour Force Survey, 1946 to 2016; Demosim microsimulation model, 2017 (2036).

reference scenario suggests labour force growth that would stabilize at around 0.7% per year in 2021.

The low-growth scenario, which assumes an immigration rate of 0.5% in 2022 and stabilization thereafter, expects labour force growth to reach near zero by 2026. This scenario underlines the importance of immigration. In fact, in the absence of immigration in 2018 and after (first year of projection in the model), Canada's labour force would begin to contract in 2022 and would fall below 19 million people by 2036 (scenario not presented).

Results obtained based on other scenarios, which have different assumptions about future labour force participation rates by age group—"constant rates," "trends from 1995 to 2017," and "50% growth" scenarios—differed little from the reference scenario.

Overall participation rate decreases in all scenarios

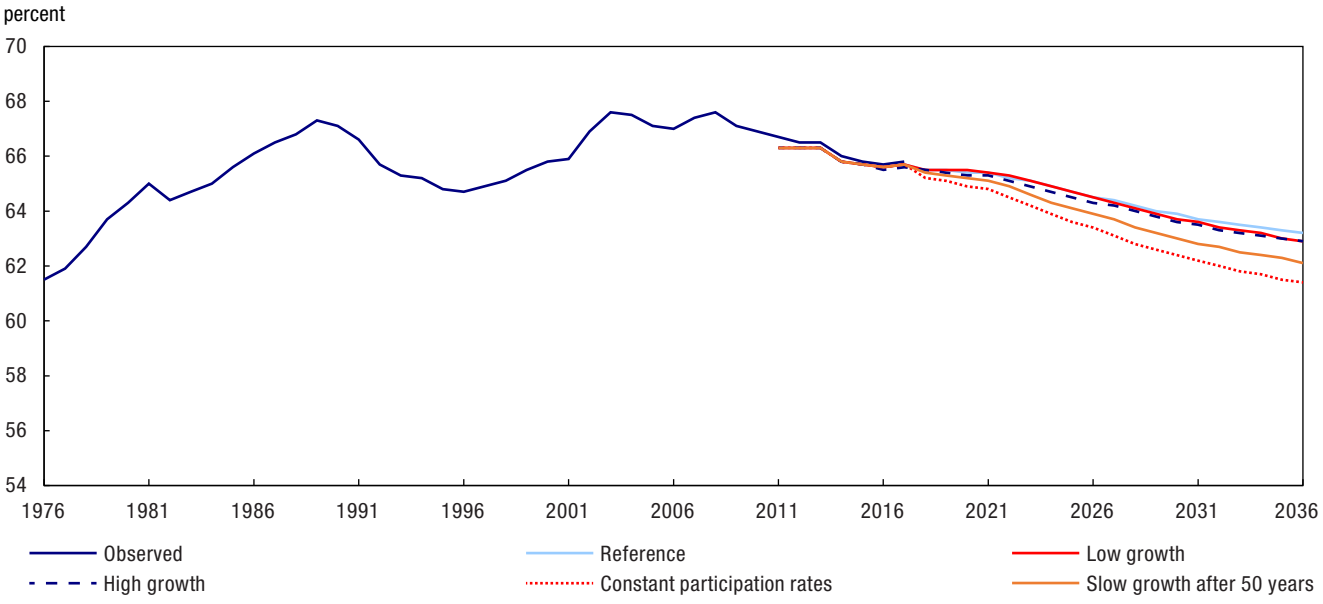
Despite having decreased in recent years, Canada's overall participation rate in 2017 (66%) was the highest among the G7 countries according to data from the Organisation for Economic Co-operation and Development (OECD).[5] The United Kingdom (63%), the United States (63%), Germany (61%), Japan (61%), France (56%) and Italy (50%) all had lower rates. The average for OECD countries was 60%.

One of the reasons for Canada's high rate is its past demographic history: the baby boom phenomenon was particularly strong in Canada during the 1950s and 1960s, and many baby boomers were still in the labour market in 2017.

All projection scenarios indicate that the decrease that began recently could continue in the coming years (Chart 3). By 2036, the overall labour force participation rate could vary from 61%, according to the "constant rate" scenario, to 63%, according to the reference scenario. The reference scenario assumes that the upward trends in participation rates observed among people aged 50 and over will continue.

The results of scenarios proposing variations in the components of population growth (high- and low-growth scenarios) were very similar to those of the reference scenario. These results suggest that, even though the overall participation rate will decline as a result of population aging, the magnitude of that trend could be more impacted by changes in labour force

Chart 3
Observed (1981 to 2017) and projected (2018 to 2036) overall participation rates according to five scenarios, Canada



Source: Statistics Canada, Labour Force Survey, 1946 to 2016; Demosim microsimulation model, 2017 (2036).

participation than by changes in the components of population growth (fertility, mortality, migration).

That being said, the ongoing increase in labour force participation rates beyond the age of 50 is not expected to fully offset the effects of the aging of the labour force.

By 2036, Canada could have fewer than three people in the labour force for every person aged 65 and over who is not in the labour force

In the early 1980s, when the vast majority of baby boomers were in the labour market, Canada had six people in the labour force for every person aged 65 and over who was not in the labour force. By 2017, this ratio had declined to four people in the labour force for every person aged 65 and over who was not in the labour force. Under all projection scenarios, this ratio could be less than 3 to 1 in 2036 (Chart 4).

All scenarios provided similar results, which suggests that neither an increase nor a decrease in immigration levels, nor further increases in labour force participation rates for people aged 50 and over, could change the projected trend.

In 2036, 1 in 4 people in the labour force could be 55 or over

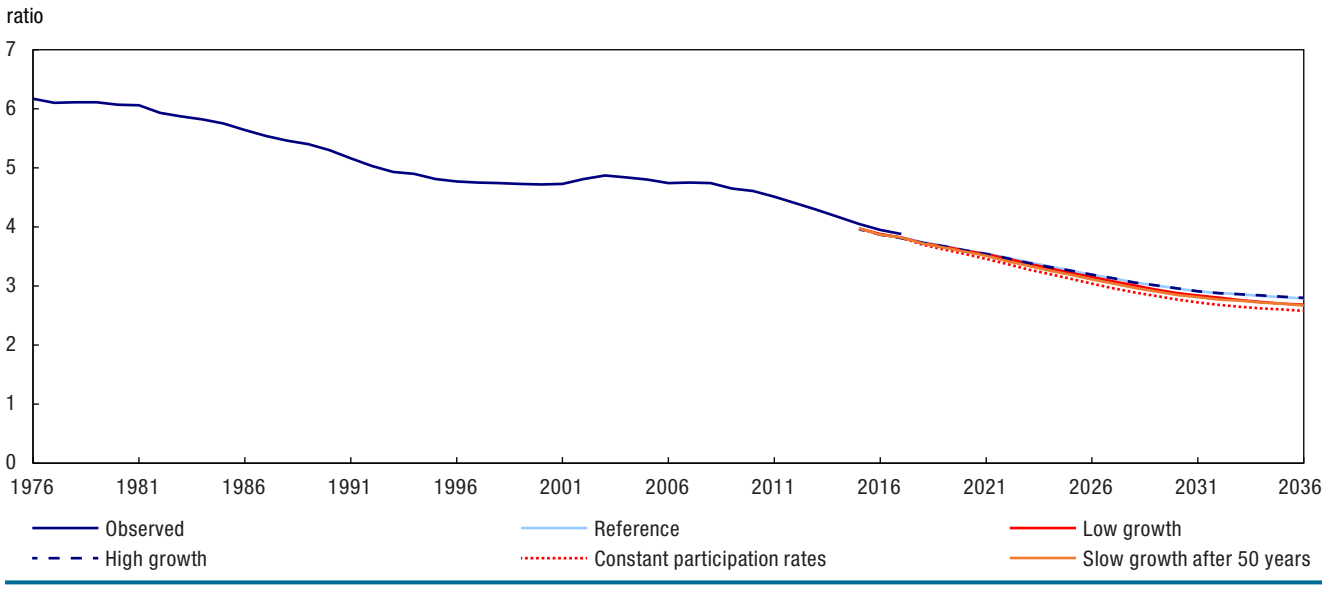
In 2021, the year in which the last baby boomers will reach the age of 55, 23% of the labour force could be aged 55 or over. This proportion could continue to increase slightly, to 25% in 2036 (Chart 5, reference scenario). The more modest increase in this proportion in the years after 2021 than in years prior is related to the arrival of smaller generations—particularly Generation X (people born from 1966 to 1980)—at these ages.

All labour force scenarios show a strong increase in ethnocultural diversity

In 2016, just over one in four people in the labour force (26%) were born outside Canada (Chart 6). This proportion has been increasing since the mid-1990s because of sustained levels of immigration to Canada.

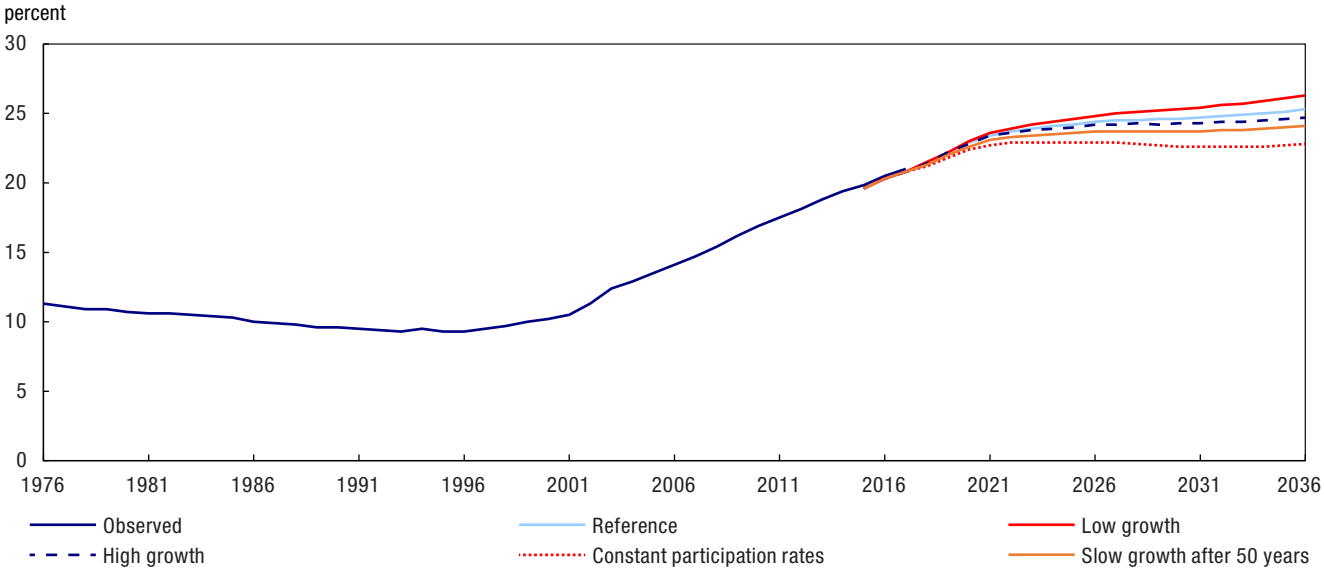
According to the reference scenario, by 2036 this proportion could reach 34%, or just over one in three people in the labour force. Because they propose variants on future immigration levels, the high- and low-growth scenarios lead to different results: the proportion would reach 37% according to the

Chart 4
Observed (1976 to 2017) and projected (2018 to 2036) number of persons in the labour force for each person aged 65 and over and not in the labour force according to five scenarios, Canada



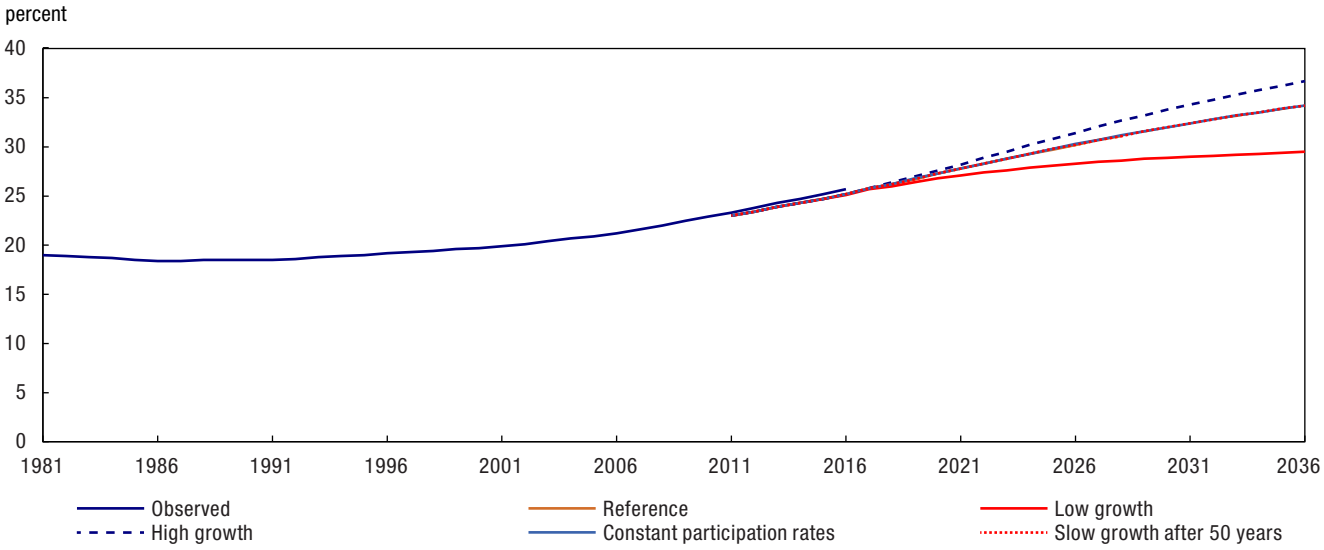
Source: Statistics Canada, Labour Force Survey, 1946 to 2016; Demosim microsimulation model, 2017 (2036).

Chart 5
Observed (1976 to 2017) and projected (2018 to 2036) percentage of people aged 55 and over in the labour force according to five scenarios, Canada



Source: Statistics Canada, Labour Force Survey, 1946 to 2016; Demosim microsimulation model, 2017 (2036).

Chart 6
Observed (1981 to 2016) and projected (2017 to 2036) proportion of the foreign-born population in the labour force according to five scenarios, Canada



Source: Statistics Canada, 1981, 1986, 1991, 1996, 2001, 2006 and 2016 censuses; 2011 National Household Survey (adjusted); Labour Force Survey, 2017; Demosim microsimulation model, 2017 (2036).

high-growth scenario, and would not exceed 30% according to the low-growth scenario.

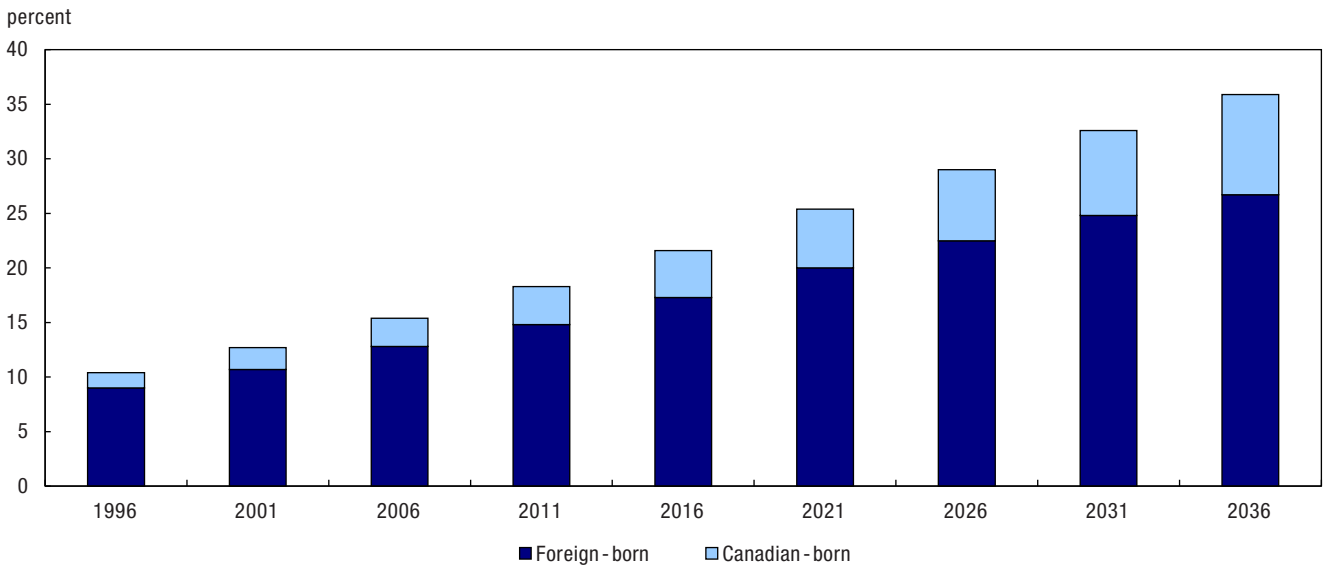
Over the past 25 years, the majority of Canadian immigrants who came to Canada were born in Asia. As a result, the proportion of members of visible minority groups in the labour force has also increased rapidly over the past 20 years (Chart 7). This proportion was 22% in 2016 and could reach 36% in 2036 according to the reference scenario, or more than one in three people in the labour force. This proportion could be lower (33%) in the low-growth scenario, and could reach 38% in the high-growth scenario, which suggests an immigration rate of 1% as of 2022, and a similar distribution of immigrants across countries of origin.

The visible minority population is growing not only because of immigration, but also because of immigrants already settled in Canada having children. As a result, the proportion of people belonging to visible minorities groups born in Canada is also increasing. Combined with the fact that Canadian-born visible minorities people tend to have higher levels of education than the rest of the population[6]—an element taken into account in the projection model—the proportion of Canadian-born visible minority members within the labour force is also rising rapidly. Among labour force participants who were part of a visible minority group in 2016, 20% were born in Canada and, therefore, were likely educated in Canada. By 2036, this proportion could reach 26% according to the reference scenario, 24% in the high-growth scenario and 30% in the low-growth scenario. The higher proportion in the low-growth scenario is explained by the fact that the concentration of foreign-born individuals within the labour force would be lower because of a lower level of immigration.

Results vary considerably from one region to another

The national situation masks significant regional differences. The Demosim microsimulation projection model projects the population and its characteristics on a sub-provincial scale, mainly for the country's major metropolitan areas and non-metropolitan areas (see the section on Data sources, methods and definitions). Since the structure of the economy is often different between urban and rural areas, it is important to understand regional variations in projected labour force trends.

Chart 7
Observed (1996 to 2016) and projected (2021 to 2036) percentage of visible minorities in the labour force by immigrant status, reference scenario, Canada



Source: Statistics Canada, 1996, 2001, 2006 and 2016 censuses; 2011 National Household Survey (adjusted); Demosim microsimulation model, 2017 (2036).

Labour force characteristics for 18 regions were projected, with some groupings required because of smaller population sizes: in the Atlantic, (1) the Halifax, St. John's, Saint John and Moncton metropolitan areas combined, and (2) non-metropolitan areas; in Quebec, (3) the Montréal metropolitan area, (4) other metropolitan areas (Sherbrooke, Québec, Trois-Rivières and Saguenay combined) and (5) non-metropolitan areas; in Ontario, (6) the metropolitan areas of Ottawa–Gatineau, (7) the Toronto metropolitan area and (8) the Sudbury and Thunder Bay metropolitan areas combined, which are both located in Northern Ontario, (9) the other metropolitan areas (Brantford, Oshawa, Kitchener–Cambridge–Waterloo, Barrie, Guelph, Kingston, Hamilton, London, Peterborough, St. Catharines–Niagara, Windsor combined) and (10) non-metropolitan areas; in Manitoba and Saskatchewan, (11) the Winnipeg, Regina and Saskatoon metropolitan areas combined, and (12) non-metropolitan areas; in Alberta, (13) the Calgary and Edmonton metropolitan areas combined, and (14) non-metropolitan areas; in British Columbia, (15) the Vancouver metropolitan area, (16) the other metropolitan areas (Kelowna, Victoria, Abbotsford–Mission combined), and (17) non-metropolitan areas; and (18) the three territories (Nunavut, Northwest Territories and Yukon) considered together.

Projection results by region based on the reference scenario are presented in Table 2. However, given the uncertainties about the future of the Canadian labour force, readers are invited to also consider results from alternative scenarios.[7]

According to the results of the reference scenario, labour force growth would remain positive in most Canadian regions, with the exception of Thunder Bay and Sudbury (combined), Quebec outside the census metropolitan areas (CMAs), and the Atlantic region outside the CMAs, where it would be negative. As is currently the case, total population growth should remain higher in metropolitan areas than in non-metropolitan areas by 2036. In fact, all regions

Table 2
Demographic indicators of the labour force by region, reference scenario, 2017 and 2036

	Average annual growth	Overall participation rate		Aged 55 and over / aged 15 and over		Foreign-born persons		Visible minorities		Ratio in the labour force, aged 15 and over / not in the labour force, aged 65 and over	
	2017 to 2036	2017	2036	2017	2036	2017	2036	2017	2036	2017	2036
Regions	percent									ratio	
Atlantic CMAs[1]	0.2	65.9	60.4	19.5	27.8	8.4	14.7	7.0	13.3	3.9	2.3
Atlantic, outside CMAs	-0.5	58.4	53.2	25.1	31.6	4.5	9.0	2.6	6.1	2.5	1.6
Montréal CMA	1.2	67.6	65.3	18.6	23.3	29.6	39.3	23.5	37.1	4.2	3.3
Other Québec CMAs	0.0	63.8	57.4	20.5	25.3	6.2	10.4	3.7	7.3	3.0	1.8
Québec, outside CMAs	-0.1	60.8	55.0	23.3	26.5	2.5	4.3	1.2	2.8	2.6	1.6
Ottawa–Gatineau CMA	1.1	67.3	64.3	18.5	23.5	23.5	30.4	21.2	33.5	4.5	3.0
Sudbury and Thunder Bay CMAs	-0.5	60.4	55.5	21.3	27.5	5.6	6.4	3.2	5.9	3.0	1.8
Toronto CMA	1.5	66.9	65.5	20.0	25.6	53.2	57.0	50.6	65.6	4.7	3.6
Other Ontario CMAs	0.7	64.8	61.5	20.6	26.3	19.8	23.7	13.9	23.6	3.7	2.5
Ontario, outside CMAs	0.1	60.0	57.7	24.5	27.3	6.9	7.2	2.4	4.1	2.7	1.9
Winnipeg, Regina and Saskatoon CMAs	1.5	68.5	67.5	19.3	23.0	25.0	43.3	23.1	43.9	4.6	3.7
Manitoba and Saskatchewan, outside CMAs	0.4	65.4	64.3	25.2	27.9	10.8	21.8	5.3	14.5	3.5	2.8
Alberta CMAs	2.3	72.4	70.6	18.6	23.0	30.9	42.7	29.1	46.2	6.1	4.6
Alberta, outside CMAs	1.3	70.2	68.1	22.0	26.2	11.6	18.0	7.2	14.4	5.1	3.5
Vancouver CMA	1.4	67.4	62.7	20.0	24.7	46.4	52.8	47.6	61.6	4.5	3.0
Other British Columbia CMAs	0.8	65.2	60.7	21.3	24.9	19.4	24.7	14.9	23.5	3.3	2.3
British Columbia, outside CMAs	0.2	62.1	56.8	24.6	26.8	11.1	13.6	5.1	8.5	2.8	1.9
Territories	1.2	73.5	70.7	19.8	23.8	10.7	16.0	7.2	13.3	9.6	5.6

1. CMAs are census metropolitan areas.

Source: Statistics Canada, Labour Force Survey, 2017; Demosim microsimulation model, 2017 (2036).

outside Canada's CMAs should have negative or near-zero population growth by 2036.

These results are largely related to the projected geographic distribution of immigrants admitted to Canada[8] and regional differences in the age structure.

Even though the participation rate is projected to decrease in all Canadian regions by 2036, the decline is expected to be more pronounced in eastern Canada than in western Canada. In 2036, according to the reference scenario, the lowest overall participation rate (53%) could be observed in the Atlantic non-metropolitan areas, and the highest in both Alberta metropolitan areas (Calgary and Edmonton combined) and the territories (71%). Specifically, 18 percentage points would then separate the participation rate for these regions; in 2017, the maximum difference between these two regions was 15 percentage points.

Some regions stand out from others, such as the Montréal and Toronto metropolitan areas, which are the only ones in eastern Canada that would see little change in their overall participation rates (from 68% in 2017 to 65% in 2036 for Montréal, and from 67% to 66% for Toronto). This is mainly because of the importance of immigration in these two major urban areas.

The regional analysis of the results in the five scenarios developed (the reference scenario and the other four scenarios presented in the Supplementary Information section) shows conclusions similar to those prevailing at the national level. The scenarios that vary the assumptions for the components of population growth ("reference," "high-growth" and "low-growth" scenarios) lead to quite different results for the size and growth of the labour force, but similar results for the projected trends in the overall participation rate. Differences in the overall participation rate arise in the scenarios that propose different trends in projected labour force participation rates for different age groups (especially beyond age 50) ("trends from 1995 to 2017," "constant rates" or "50% growth" scenarios).

In all regions, aging and increasing ethnocultural diversity of the labour force are expected to continue

In the reference scenario, the aging of the labour force would continue in all regions of Canada, but to varying degrees. In general, the proportion of people in the labour force that are aged 55 and over should be higher in 2036 in non-metropolitan areas than in metropolitan areas.[9]

For example, in 2017, non-metropolitan areas in the Atlantic, Ontario, Manitoba, Saskatchewan and British Columbia had the highest proportion of people aged 55 and over, with 25%. By 2036, this proportion could exceed 30% in the Atlantic, outside the CMAs. Conversely, this proportion could remain below 25% in the Montréal and Ottawa–Gatineau metropolitan areas; in the metropolitan areas of Manitoba, Saskatchewan and Alberta; and in the territories.

The ratio of the number of people in the labour force for each person not in the labour force aged 65 and over should also decrease in all regions of Canada by 2036. In 2017, the ratio was lowest in the Atlantic non-metropolitan areas (2.5), and highest in Alberta's metropolitan areas (6.1) and in the territories (9.6). By 2036, six regions could have fewer than two people in the labour force for every person not in the labour force aged 65 and over: the Atlantic, Quebec, Ontario and British Columbia non-metropolitan areas, and the metropolitan areas of Quebec (with the exception of Montréal), and Sudbury and Thunder Bay combined. This ratio would remain above four in two regions: the territories (5.6) and Alberta's metropolitan areas (4.6).

With sustained levels of immigration in Canada in the future—according to the reference scenario—the proportion of people in the labour force that are foreign-born or members of visible minority groups should increase in all regions. Already very different from one region to another in 2017, regional variations could be even larger by 2036. For example, more than 50 percentage points separated the Toronto metropolitan area (53% of the labour force born outside Canada) from the Quebec non-metropolitan areas in 2017 (3%). By 2036, the gap between these two regions could be nearly 53 percentage points, according to the reference scenario.

These gaps would be even larger with regards to the proportion of people in the labour force that are members of a visible minority group, since the fertility of immigrants already living in Canada contributes to the growth of the visible minority population.

Thus, in 2017, about 50 percentage points separated the Toronto metropolitan area (where 51% belonged to a visible minority group) from the Quebec non-metropolitan areas (1%) in 2017. The gap between these two regions could increase to 63 percentage points in 2036, according to the reference scenario.

Overall, the ethnocultural[10] diversity of the labour force would remain significantly lower in all non-metropolitan areas of the country, compared with metropolitan areas. For example, the proportion of people in the labour force that belong to a visible minority group could reach 13% in Atlantic metropolitan areas by 2036, compared with 6% in Atlantic non-metropolitan areas. In British Columbia, this proportion could reach 62% in the Vancouver metropolitan area, 24% in other metropolitan areas of the province and 9% in non-metropolitan areas.

Finally, the other scenarios developed in this exercise also indicate an aging workforce in all regions of the country. However, the extent of this aging would be more dependent in the future on changes in labour force participation rates across age groups, particularly those aged 50 and over, than on changes in the components of population growth.

Conversely, ethnocultural diversity is expected to increase, regardless of the scenario. The magnitude of this increase would be smaller in the low-growth scenario, which assumes lower levels of immigration, than in the reference or high-growth scenarios.

Conclusion

Several observations emerge from the projection results presented in this article. On the one hand, the decrease in the overall participation rate, the continued aging of the labour force and the increase in its ethnocultural diversity for all regions of the country seem inevitable, with the five projection scenarios leading to these results, to varying degrees. These results are also consistent with labour force projections previously released by Statistics Canada.[11,12]

On the other hand, fertility, mortality and especially immigration levels will have a significant impact on the size, growth and ethnocultural diversity of the Canadian labour force in the coming years. The future evolution of labour force participation rates by age group could, at least in part, prevent a rapid decline in the overall labour force participation rate, but this effect is not expected to be strong enough to compensate for the aging of the labour force.

In 2017/2018, 80% of Canada's population growth came from migratory increase, and only 20% came from natural increase (births minus deaths). In recent years, several Atlantic non-metropolitan areas have experienced more deaths than births within their populations. These projections show that, if these trends continue in the future, Canada's labour force will become increasingly heterogeneous across the country by 2036. Many metropolitan areas may see their labour force continue to grow, with a slower decline in the number of people in the labour force for each person not in the labour force, and a sharp increase in ethnocultural diversity. However, several non-metropolitan areas may see their labour force decline in the coming years, and may maintain a low level of ethnocultural diversity. In some cases, the ratio of the number of people in the labour force for each person not in the labour force could even be less than two to one.

In this context, these projections show that labour force issues in Canada are expected to become increasingly regional, as labour demand also affects the demographic evolution of regions.[13] This situation may pose challenges, particularly in terms of regional and sectoral labour shortages, and the maintenance of services for specific populations.

Laurent Martel *is director of Demography division at Statistics Canada.*

Data sources, methods and definitions

Data sources

The data that were used to compute these population projections are drawn from several data sources. Labour force data are derived from the Labour Force Survey, a mandatory monthly survey that collects labour force information from all members of households aged 15 and over, as well as information on the demographic characteristics and family ties of all household members. Residents of reserves and other Aboriginal settlements in the provinces, full-time members of the Canadian Armed Forces and persons living in institutions are excluded from the scope of the survey.

Data from the 1996, 2001, 2006 and 2016 censuses, as well as the 2011 National Household Survey, were also used for the base population of the projections, as well as to compute many parameters used as inputs to the projection model.

Projection assumptions and scenarios

The projections were made using Demosim, Statistics Canada's microsimulation projection model that simultaneously projects many population characteristics, including immigrant status, place of birth, visible minority status, Aboriginal identity, highest level of education, labour force participation, religion, mother tongue and other characteristics.[14] Demosim also projects the Canadian population at the scale of census metropolitan areas (CMAs)[15] and non-CMA areas, some of which are grouped according to population sizes.

Demosim's starting population is that of the 2011 National Household Survey (NHS), which has been adjusted for net undercoverage, partially enumerated Indian reserves and institutional populations. All projection products produced using this version of Demosim have a projection horizon of 25 years—ending in 2036. However, observed data, such as labour force participation rates by age group, were added to the model for the period from 2012 to 2017.

For this exercise, five projection scenarios were developed to provide a plausible range for future labour force changes. The choice of scenarios is not intended to predict the future, but rather to provide data users with a portrait of the Canadian population if certain conditions are met. These scenarios also make it possible to estimate the sensitivity of projected labour force trends to changes in the components of population growth and labour force participation rates.

These five scenarios were validated through consultations with other federal departments such as Immigration, Refugees and Citizenship Canada; Indigenous and Northern Affairs Canada; Department of Finance Canada; and the Office of the Chief Actuary of Canada. These scenarios were also submitted to the Demosim scientific committee for review.

Scenarios varying according to demographic components

Three scenarios combine different assumptions on fertility, mortality, international and interregional migration. The reference scenario essentially suggests a continuation of recent trends, with a total fertility rate of 1.67 children per woman reached in 2021 and remaining constant thereafter, life expectancy at birth reaching 84.6 years for men and 87.2 years for women in 2036, and an immigration rate of 8.3 immigrants per 1,000 population over the entire projection period. The geographic distribution of immigrants in the future is based on that observed over the period from 2010 to 2015, when Ontario received proportionately fewer immigrants (about 40% of all landed immigrants in Canada) than in the past, while Quebec (about 20%) and the Prairie provinces (about 23%) received more. The country of birth of projected Canadian immigrants is also based on that of landed immigrants in the recent period from 2010 to 2015, when the main countries of birth were the Philippines (15% of all immigrants admitted to Canada), India (13%), China (11%), Iran (4%) and Pakistan (4%). Finally, interregional migration patterns are those that were observed on average during the periods from 1996 to 2001, 2001 to 2006 and 2006 to 2011.

In the low-growth scenario, the total fertility rate reaches 1.53 children per woman in 2021, life expectancy at birth reaches 83.5 years and 86.1 years for men and women respectively in 2036, and the immigration rate reaches 5.0 immigrants per 1,000 population in 2022, then remains constant. The assumption regarding the geographic distribution of immigrants, country of birth and subprovincial migration are the same as in the reference scenario.

In the high-growth scenario, the total fertility rate reaches 1.88 children per woman in 2021, life expectancy at birth reaches 86.2 years for men and 89.0 years for women respectively in 2036, and the immigration rate reaches 10.0 immigrants per 1,000 population in 2022, then remains constant. Assumptions regarding the geographic distribution of immigrants, country of birth and subprovincial migration are the same as in the reference scenario.

Other assumptions are common to these three scenarios, in particular the one regarding the future evolution of education level, which assumes a gradual capping of the upward trend in population education and a continuation of recent differences between projected groups (e.g., immigrants, visible minority groups, Aboriginal peoples).

More information on these assumptions and scenarios is available in Statistics Canada's 2017 document entitled *Immigration and Diversity: Population Projections for Canada and its Regions, 2011 to 2036*.

Participation rate assumptions

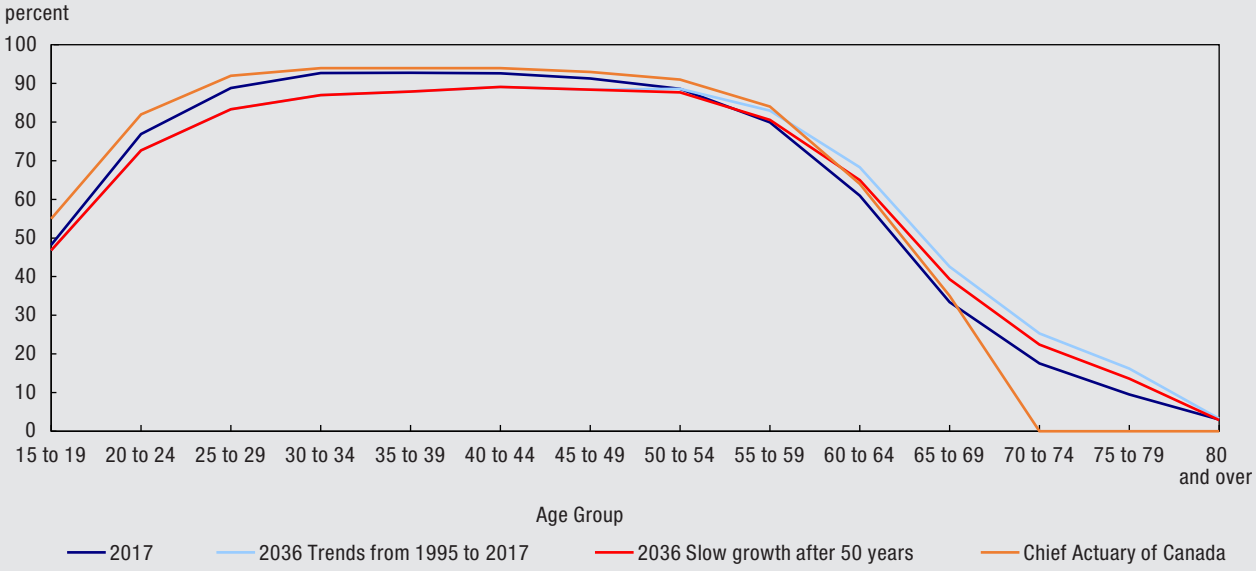
Three different assumptions were developed regarding the future evolution of labour force participation rates by age group for men at the national level. These three assumptions were combined with the reference scenario for the demographic components to isolate the effect of changes in the future evolution of these participation rates.

The first of these assumptions assumes constant participation rates for men, based on 2017 levels observed in Statistics Canada's Labour Force Survey (LFS) (Chart 8). This assumption provides a basis for evaluating the other scenarios that were formulated.

The second assumption—trends from 1995 to 2017—implies a continuation by 2036 of the trends observed from 1995

Data sources, methods and definitions (cont.)

Chart 8
Observed (2017) and projected (2036) participation rates according to two scenarios, and participation rates projected by the Chief Actuary of Canada



Source: Statistics Canada, Labour Force Survey, 2017; Demosim microsimulation model, 2017 (2036).

to 2017 in the LFS. As these trends are essentially stable and linear for age groups under 50, they are projected using linear extrapolations to 2036, and the projected rates are only marginally different from those observed recently.

From the age of 50, these trends are upward and have been extrapolated to 2036 in the future using second-order polynomial regressions, which assume asymptotic curves to avoid reaching levels in the future that appear absurd or inconsistent with the level of adjacent age groups.

Several factors indicate that the participation rates of older workers may continue to increase in the future. These factors include the delay in entering the labour force at an early age, particularly due to longer periods of education; the decline in coverage of many pension plans and the increase in the number of defined contribution plans; the indebtedness of Canadian households; growing sectoral labour shortages in some regions of the country; and the continued increase in life expectancy.

The third assumption—50% growth—halves the projected growth in participation rates among men aged 50 and over from the assumption on trends from 1995 to 2017, thus proposing a more modest increase in participation rates in the future.

Finally, Chart 8 also compares these three assumptions to the 2035 projected rates for men projected by the Office of the Chief Actuary of Canada in its *Actuarial Report (27th) on the Canada Pension Plan*.[16] Most of the differences, but not a significant amount, are for the under-30 age group, where the projected rates are slightly higher under the Office of the Chief Actuary assumption than according to Statistics Canada. Beyond age 50, the Office of the Chief Actuary's assumption is very close to Statistics Canada's "low-growth" assumption and is therefore in the middle of the range proposed in this exercise.

Projected rates for women are derived from those for men using an assumed constant male–female ratio for age groups under 50. For the older age groups, the male-female ratio is assumed to stay constant for cohorts as they age, in order to gradually eliminate a generation effect, with women born more recently having a labour market participation rate closer to that of men.

During the simulation, these projected participation rates by age group and sex in Canada are multiplied by multiplying factors to vary the participation rates according to several characteristics of the simulated individuals as well as regional variations. These multipliers are obtained through logistic regressions applied to data in a file that combines the 2001 and 2006 censuses with the 2011 National Household Survey (NHS). Model variables include Aboriginal group; Registered Indian status; visible minority group; immigrant status; immigration period; generation status; place of birth; marital status; presence of children and age of youngest child; education level; knowledge of official languages; and place of residence. Multiplier factors are assumed to be constant over the entire projection period, with separate analysis of the 2001, 2006 and 2011 censuses and 2011 NHS showing a general stability of these parameters over time.

Supplementary information: Alternative Scenarios

Table A1
Demographic indicators of the labour force by region, low-growth scenario, 2017 and 2036

	Average annual growth	Overall participation rate		Aged 55 and over / aged 15 and over		Foreign-born persons		Visible minorities		Ratio in the labour force, aged 15 and over / not in the labour force, aged 65 and over	
	2017 to 2036	2017	2036	2017	2036	2017	2036	2017	2036	2017	2036
Regions	percent									ratio	
Atlantic CMAs[1]	0.0	65.9	60.6	19.5	28.3	8.4	11.6	7.0	11.0	3.9	2.3
Atlantic, outside CMAs	-0.7	58.4	53.4	25.1	32.0	4.5	6.9	2.6	4.8	2.5	1.6
Montréal CMA	0.8	67.6	65.0	18.6	24.6	29.6	34.7	23.5	34.4	4.2	3.1
Other Québec CMAs	-0.1	63.8	57.5	20.5	25.7	6.2	8.3	3.7	6.1	3.0	1.8
Québec, outside CMAs	-0.3	60.8	55.3	23.3	26.6	2.5	3.6	1.2	2.4	2.6	1.6
Ottawa–Gatineau CMA	0.7	67.3	64.1	18.5	24.3	23.5	26.0	21.2	30.4	4.5	2.9
Sudbury and Thunder Bay CMAs	-0.6	60.4	55.6	21.3	27.8	5.6	5.3	3.2	5.1	3.0	1.8
Toronto CMA	0.9	66.9	65.1	20.0	27.2	53.2	52.0	50.6	63.2	4.7	3.3
Other Ontario CMAs	0.4	64.8	61.4	20.6	26.9	19.8	20.4	13.9	21.4	3.7	2.4
Ontario, outside CMAs	0.0	60.0	58.0	24.5	27.4	6.9	6.3	2.4	3.7	2.7	2.0
Winnipeg, Regina and Saskatoon CMAs	0.9	68.5	66.8	19.3	24.6	25.0	36.4	23.1	38.3	4.6	3.4
Manitoba and Saskatchewan, outside CMAs	0.1	65.4	63.9	25.2	28.9	10.8	17.4	5.3	11.6	3.5	2.7
Alberta CMAs	1.7	72.4	70.3	18.6	24.3	30.9	37.0	29.1	42.1	6.1	4.3
Alberta, outside CMA	1.0	70.2	68.1	22.0	26.9	11.6	14.5	7.2	12.0	5.1	3.4
Vancouver CMA	0.7	67.4	62.2	20.0	26.1	46.4	47.2	47.6	58.8	4.5	2.8
Other British Columbia CMAs	0.5	65.2	60.6	21.3	25.5	19.4	21.1	14.9	21.4	3.3	2.3
British Columbia, outside CMAs	0.0	62.1	56.6	24.6	27.2	11.1	11.6	5.1	7.5	2.8	1.9
Territories	0.9	73.5	70.9	19.8	24.2	10.7	12.8	7.2	11.0	9.6	5.6

1. CMAs are census metropolitan areas.

Source: Statistics Canada, Labour Force Survey, 2017; Demosim microsimulation model, 2017 (2036).

Table A2
Demographic indicators of the labour force by region, high-growth scenario, 2017 and 2036

	Average annual growth	Overall participation rate		Aged 55 and over / aged 15 and over		Foreign-born persons		Visible minorities		Ratio in the labour force, aged 15 and over / not in the labour force, aged 65 and over	
	2017 to 2036	2017	2036	2017	2036	2017	2036	2017	2036	2017	2036
Regions	percent									ratio	
Atlantic CMAs[1]	0.5	65.9	59.9	19.5	27.5	8.4	16.5	7.0	14.0	3.9	2.2
Atlantic, outside CMAs	0.0	58.4	52.6	25.1	31.4	4.5	10.3	2.6	6.8	2.5	1.5
Montréal CMA	1.6	67.6	65.0	18.6	22.6	29.6	42.0	23.5	38.6	4.2	3.3
Other Québec CMAs	0.2	63.8	56.8	20.5	25.0	6.2	11.7	3.7	8.1	3.0	1.8
Québec, outside CMAs	0.0	60.8	54.3	23.3	26.4	2.5	4.7	1.2	3.0	2.6	1.6
Ottawa–Gatineau CMA	1.3	67.3	64.0	18.5	23.0	23.5	32.7	21.2	35.2	4.5	3.0
Sudbury and Thunder Bay CMAs	-0.3	60.4	54.9	21.3	27.4	5.6	7.0	3.2	6.4	3.0	1.8
Toronto CMA	2.0	66.9	65.2	20.0	24.9	53.2	59.3	50.6	66.7	4.7	3.6
Other Ontario CMAs	1.0	64.8	61.1	20.6	25.9	19.8	25.4	13.9	24.7	3.7	2.5
Ontario, outside CMAs	0.3	60.0	57.1	24.5	27.2	6.9	7.8	2.4	4.4	2.7	1.9
Winnipeg, Regina and Saskatoon CMA	1.9	68.5	67.4	19.3	22.2	25.0	46.3	23.1	46.5	4.6	3.8
Manitoba and Saskatchewan, outside CMAs	0.7	65.4	64.0	25.2	27.4	10.8	24.1	5.3	15.9	3.5	2.8
Alberta CMAs	2.6	72.4	70.4	18.6	22.3	30.9	45.4	29.1	48.1	6.1	4.6
Alberta, outside CMAs	1.5	70.2	67.8	22.0	25.8	11.6	20.0	7.2	15.8	5.1	3.5
Vancouver CMA	1.9	67.4	62.6	20.0	23.8	46.4	55.6	47.6	63.0	4.5	3.1
Other British Columbia CMAs	1.1	65.2	60.5	21.3	24.5	19.4	26.7	14.9	24.7	3.3	2.3
British Columbia, outside CMAs	0.5	62.1	56.4	24.6	26.5	11.1	15.1	5.1	9.1	2.8	1.9
Territories	1.4	73.5	70.2	19.8	23.8	10.7	17.7	7.2	14.6	9.6	5.5

1. CMAs are census metropolitan areas.

Source: Statistics Canada, Labour Force Survey, 2017; Demosim microsimulation model, 2017 (2036).

Table A3
Demographic indicators of the labour force by region, constant participation rate scenario, 2017 and 2036

	Average annual growth	Overall participation rate		Aged 55 and over / aged 15 and over		Foreign-born persons		Visible minorities		Ratio in the labour force, aged 15 and over / not in the labour force, aged 65 and over	
	2017 to 2036	2017	2036	2017	2036	2017	2036	2017	2036	2017	2036
Regions	percent									ratio	
Atlantic CMAs[1]	0.2	65.9	58.3	19.5	24.8	8.4	14.9	7.0	13.6	3.9	2.1
Atlantic, outside CMAs	-0.5	58.4	50.9	25.1	28.2	4.5	9.2	2.6	6.3	2.5	1.4
Montréal CMA	1.2	67.6	63.7	18.6	21.0	29.6	39.4	23.5	37.5	4.2	3.0
Other Québec CMAs	0.0	63.8	55.5	20.5	22.4	6.2	10.5	3.7	7.5	3.0	1.7
Québec, outside CMAs	-0.1	60.8	53.2	23.3	23.6	2.5	4.3	1.2	2.8	2.6	1.5
Ottawa–Gatineau CMA	1.1	67.3	62.4	18.5	20.9	23.5	30.4	21.2	33.9	4.5	2.8
Sudbury and Thunder Bay CMAs	-0.5	60.4	53.2	21.3	24.1	5.6	6.4	3.2	6.1	3.0	1.7
Toronto CMA	1.5	66.9	63.7	20.0	23.3	53.2	56.6	50.6	65.9	4.7	3.2
Other Ontario CMAs	0.7	64.8	59.5	20.6	23.5	19.8	23.6	13.9	23.9	3.7	2.3
Ontario, outside CMAs	0.1	60.0	55.6	24.5	24.2	6.9	7.1	2.4	4.2	2.7	1.8
Winnipeg, Regina and Saskatoon CMAs	1.5	68.5	65.9	19.3	20.8	25.0	43.6	23.1	44.5	4.6	3.4
Manitoba and Saskatchewan, outside CMAs	0.4	65.4	62.6	25.2	25.5	10.8	22.1	5.3	14.8	3.5	2.6
Alberta CMAs	2.3	72.4	69.1	18.6	21.0	30.9	42.7	29.1	46.5	6.1	4.2
Alberta, outside CMAs	1.3	70.2	66.4	22.0	24.1	11.6	18.1	7.2	14.6	5.1	3.2
Vancouver CMA	1.4	67.4	61.1	20.0	22.3	46.4	52.5	47.6	61.9	4.5	2.8
Other British Columbia CMAs	0.8	65.2	59.0	21.3	22.4	19.4	24.7	14.9	23.8	3.3	2.2
British Columbia, outside CMAs	0.2	62.1	54.8	24.6	24.0	11.1	13.6	5.1	8.6	2.8	1.7
Territories	1.2	73.5	69.3	19.8	21.8	10.7	16.0	7.2	13.4	9.6	5.0

1. CMAs are census metropolitan areas.

Source: Statistics Canada, Labour Force Survey, 2017; Demosim microsimulation model, 2017 (2036).

Table A4
Demographic indicators of the labour force by region, slow growth in participation rate (after age 50) scenario, 2017 and 2036

	Average annual growth	Overall participation rate		Aged 55 and over / aged 15 and over		Foreign-born persons		Visible minorities		Ratio in the labour force, aged 15 and over / not in the labour force, aged 65 and over	
	2017 to 2036	2017	2036	2017	2036	2017	2036	2017	2036	2017	2036
Regions	percent									ratio	
Atlantic CMAs[1]	0.2	65.9	59.2	19.5	26.4	8.4	14.8	7.0	13.4	3.9	2.2
Atlantic, outside CMAs	-0.5	58.4	51.9	25.1	30.0	4.5	9.1	2.6	6.2	2.5	1.5
Montréal CMA	1.2	67.6	64.3	18.6	22.2	29.6	39.4	23.5	37.2	4.2	3.2
Other Quebec CMAs	0.0	63.8	56.3	20.5	23.9	6.2	10.5	3.7	7.4	3.0	1.8
Québec, outside CMAs	-0.1	60.8	53.9	23.3	25.1	2.5	4.3	1.2	2.8	2.6	1.6
Ottawa–Gatineau CMA	1.1	67.3	63.2	18.5	22.3	23.5	30.4	21.2	33.7	4.5	2.9
Sudbury and Thunder Bay CMAs	-0.5	60.4	54.2	21.3	25.9	5.6	6.4	3.2	6.0	3.0	1.7
Toronto CMA	1.5	66.9	64.4	20.0	24.6	53.2	56.9	50.6	65.7	4.7	3.4
Other Ontario CMAs	0.7	64.8	60.3	20.6	25.0	19.8	23.7	13.9	23.7	3.7	2.4
Ontario, outside CMAs	0.1	60.0	56.5	24.5	25.8	6.9	7.2	2.4	4.1	2.7	1.9
Winnipeg, Regina and Saskatoon CMAs	1.5	68.5	66.5	19.3	22.0	25.0	43.4	23.1	44.2	4.6	3.5
Manitoba and Saskatchewan, outside CMAs	0.4	65.4	63.3	25.2	26.8	10.8	22.0	5.3	14.6	3.5	2.7
Alberta CMAs	2.3	72.4	69.7	18.6	22.1	30.9	42.7	29.1	46.3	6.1	4.3
Alberta, outside CMAs	1.3	70.2	67.1	22.0	25.2	11.6	18.1	7.2	14.5	5.1	3.4
Vancouver CMA	1.4	67.4	61.7	20.0	23.6	46.4	52.7	47.6	61.7	4.5	2.9
Other British Columbia CMAs	0.8	65.2	59.7	21.3	23.7	19.4	24.7	14.9	23.6	3.3	2.2
British Columbia, outside CMAs	0.2	62.1	55.7	24.6	25.5	11.1	13.6	5.1	8.5	2.8	1.8
Territories	1.2	73.5	69.8	19.8	23.0	10.7	16.0	7.2	13.4	9.6	5.3

1. CMAs are census metropolitan areas.

Source: Statistics Canada, Labour Force Survey, 2017; Demosim microsimulation model, 2017 (2036).

Notes

1. See Fields et al. (2017).
2. See Martel et al. (2007).
3. See Martel et al. (2011).
4. See Caron-Malenfant et al. (2017).
5. Organisation for Economic Co-operation and Development, Labour Statistics Database, extracted August 2018.
6. See Abada et al. (2008).
7. See the Supplementary Information section for detailed results by region for the other four scenarios studied, namely the low-growth scenario (Table A1), the high-growth scenario (Table A2), the constant participation rate scenario (Table A3) and the slow growth in participation rate (after age 50) scenario (Table A4).
8. These projections reflect the distribution observed over the period from 2010 to 2015.
9. There are some exceptions. In Sudbury and Thunder Bay (combined), the proportion of people in the labour force that are aged 55 and over could be higher than in all other Ontario regions. The territories do not have a large urban area but could have a small proportion of people in the labour force that are aged 55 and over relative to other regions of Canada.
10. In this article, the ethnocultural diversity of the labour force has been described using indicators such as the proportion of immigrants or people belonging to visible minority groups. There are other indicators that can be used to describe the diversity of populations, such as the proportion of people reporting an indigenous identity. For some Canadian regions, this proportion is significant and is quickly rising. See Morency et al. (2015).
11. See Martel et al. (2007).
12. See Martel et al. (2011).
13. See Morissette (2018).
14. See Caron-Malenfant et al. (2017).
15. See the *2011 Census Dictionary*, Statistics Canada Catalogue no. 98-301-X.
16. See Office of the Superintendent of Financial Institutions Canada (2016).

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